

## WHAT IS CLAIMED IS:

A central vacuum power unit comprising in combination:

- a canister having a sidewall and a hollow interior;
- a chamber for collecting dirt and in fluid communication with an inlet for the working air loaded with dirt;
- a first plate extending across said hollow interior, being mounted to said sidewall and being provided with a first opening,
- a second plate extending across the hollow interior and being provided with a first opening,
- a third plate extending across the hollow interior and being provided with a first opening,
- a duct means having a sidewall, a hollow interior, a first end and a second end, the first end being mounted on the first plate and having the hollow interior of said duct means in fluid communication with the first opening of the first plate, the second end being mounted to the second plate and having the hollow interior of the duct means in fluid communication with the first opening of said second plate, said duct means supporting the second plate above the first plate, the first plate and the second plate defining with the sidewall of the canister and the sidewall of the duct means an acoustic chamber, said acoustic chamber being further provided with a lining of sound absorbing material and an outlet in the sidewall of the canister;
- a motor-fan assembly emitting noises and vibrations, resting freely against a seat made of resilient vibration absorbing material and mounted on the third plate; said motor-fan assembly

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comprising an electric motor, a vacuum fan provided with an axial intake in fluid communication with the chamber for collecting debris, a tangential outlet and a piping having a first end in fluid communication with said tangential outlet, and a second end in fluid communication with the inside of the acoustic dampening chamber; said motor-fan assembly  
 5 generating a flow of working air from the inlet of the chamber for collecting debris to the outlet of the acoustic dampening chamber;

- filtering means positioned between the chamber for collecting debris and the air intake of the vacuum fan;

10 - a first baffle means provided inside the acoustic dampening chamber and positioned to reduce direct motion of noise delivered from the second end of the piping to the outlet of the chamber;

15 - means for generating a flow of cooling air for the electric motor and means for reducing the emission of noises outside the canister;

characterized in that a portion of said piping passes across a further opening is provided in the plate provided with the seat of resilient vibration absorbing material receiving the motor-fan  
 20 assembly; said portion of piping having a vertical axis substantially parallel to the axis of the intake of the vacuum fan, so that any deformation of the seat due to the vacuum existing underneath the motor-fan assembly will allow the piping to slide freely in said further opening without solid contact with said plate.

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2. A central vacuum power unit according to claim 1, wherein the third plate and the first plate are the same plate.

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3. A central vacuum power unit according to claim 1, wherein the electric motor is further provided with a cooling fan forcing a flow of cooling air from one end of the electric motor to an opposite end of said motor, and wherein said canister further comprise a fourth plate extending across the hollow interior of the canister above the third plate, and a fifth plate extending across the hollow interior of the canister above the fourth plate, the fourth plate and the fifth plate defining with the sidewall of the canister a first chamber in fluid communication with a first opening provided in the sidewall of the canister and defining an inlet for the cooling air for the electric motor and a second opening across which a portion of a casing of said electric motor is engaged, the third plate and the fourth plate defining with the sidewall of the canister a second chamber for the cooling air coming out the electric motor and evacuated outside the canister through an opening provided in the sidewall of the canister and in fluid communication with said second chamber.

4. A central vacuum power unit according to claim 3, wherein the fifth plate and the first plate are the same plate.

5. A central vacuum power unit comprising in combination:

-- a canister having a sidewall, a hollow interior and a debris collection chamber provided with an inlet for the working air loaded with debris;

- a first plate extending across said hollow interior, being mounted to said sidewall and being provided with a first opening,

- a second plate extending across the hollow interior, being provided with a first opening and a second opening.

- a duct means having a sidewall, a hollow interior, a first end and a second end, the first end

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being mounted on the first plate and having the hollow interior of said duct means in fluid communication with the first opening of the first plate, the second end being mounted to the second plate and having the hollow interior of the duct means in fluid communication with the first opening of said second plate, said duct means supporting the second plate above the first plate, the first plate and the second plate defining with the sidewall of the canister and of the duct means an acoustic dampening chamber, said acoustic dampening chamber being further provided with a lining of sound absorbing material and an outlet in the sidewall of the canister;

10 - filtering means positioned between the debris collection chamber and the duct means;

- a motor-fan assembly emitting noises and vibrations, resting freely against a seat made of resilient vibration absorbing material and mounted on the second plate around the first opening of said second plate; said motor-fan assembly comprising an electric motor, a vacuum fan provided with an axial intake in fluid communication with the first opening of the second plate, a tangential outlet and a piping having a first end in fluid communication with said tangential outlet, and a second end in fluid communication with the inside of the acoustic dampening chamber; said motor-fan assembly generating a flow of working air from the inlet of the debris collection tank to the outlet of the acoustic dampening chamber;

20 - a first baffle means provided inside the acoustic dampening chamber and positioned to reduce direct motion of noise delivered from the second end of the piping to the outlet of the chamber;

25 - means for generating a flow of cooling air for the electric motor and reducing the emission of noises outside the canister;

characterized in that a portion of said piping passes across the second opening of the second

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plate and has a vertical axis substantially parallel to the axis of the intake of the vacuum fan, so that any deformation of the seat due to the vacuum existing underneath the motor-fan assembly will allow the piping to slide freely in the second opening of the second plate without solid contact with said second plate.

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6. A central vacuum power unit according to claim 5, wherein the pathway between the outlet of the piping and the outlet of the acoustic dampening chamber represent a portion of circle.

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7. A central vacuum power unit according to claim 6, wherein said pathway is substantially annular.

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8. A central vacuum power unit according to claim 5, wherein the duct means has a substantially vertical passage between its first end and second end, the first end being substantially co-axial with the first opening of the first plate, the second end being parallel and not aligned with the first opening of the second plate.

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9. A central vacuum power unit according to claim 5, wherein the acoustic dampening chamber and first baffle means are completely provided with a lining of sound absorbing material.

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10. A central vacuum power unit according to claim 5, wherein a sleeve of resilient vibration absorbing material is mounted around the second opening of the second plate, said sleeve having an interior of such size and orientation to allow a free axial sliding of said portion of the piping passing across the second opening of said second plate while substantially preventing leak of working air from the acoustic chamber.

11. A central vacuum power unit according to claim 10, wherein said sleeve is mounted

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on an upper side of said second plate.

12. A central vacuum power unit according to claim 11, wherein said sleeve is mounted by gluing.

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13. A central vacuum power unit according to claim 5, wherein the electric motor is further provided with a cooling fan forcing a flow of cooling air from one end of the electric motor to an opposite end of said motor, and wherein said canister further comprise a fourth plate extending across the hollow interior of the canister above the second plate, and a fifth plate extending across the hollow interior of the canister above the fourth plate, the fourth plate and the fifth plate defining with the sidewall of the canister a first chamber in fluid communication with a first opening provided in the sidewall of the canister and defining an inlet for the cooling air for the electric motor and a second opening across which a portion of a casing of said electric motor is engaged, the second plate and the fourth plate defining with the sidewall of the canister a second chamber for the cooling air coming out the electric motor and evacuated outside the canister through an opening provided in the sidewall of the canister and in fluid communication with said second chamber.

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14. A central vacuum power unit according to claim 13, wherein a set of second baffles is further provided between the inlet opening of the canister and the second opening of the fourth plate.

15. A central vacuum power unit according to claim 14, wherein said second baffles are provided with a lining of sound absorbing material.

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16. A central vacuum power unit according to claim 13, wherein the second chamber is provided with a lining of sound absorbing material.

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17. A central vacuum power unit according to claim 13, wherein the inlet of the first chamber and the outlet of the second chamber are each provided with an outer muffler provided with a lining of sound absorbing material therein.

5 18. A central vacuum power unit according to claim 17, wherein both mufflers are provided in a hollow member having parallel conduits, each conduit being in fluid communication with the exterior of the canister at opposite ends of said member, and being respectively in fluid communication with the inlet of the first chamber and the outlet of the second member.

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19. A central vacuum power unit according to claim 18, wherein said hollow member further defines means for hanging the central power unit to a wall.

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